



HEAVY DUTY FLEETS: RETROFITED, REFUELED AND FUNDED FOR A CLEANER OHIO

Ultra Low Sulfur Diesel Fuel

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- **Dispenser Pump Labeling**
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- **BP experience with ULSD**

Key Facts on the U.S. EPA Highway ULSD Sulfur Regulations



- **Effective June 1, 2006, refiners are required to produce 80% of highway diesel fuel at max 15 ppm sulfur content. Remaining 20% of highway diesel limited to 500 ppm sulfur.**
- **Terminals will have until September 1, 2006, and retailers will have until October 15, 2006 to complete their transitions to ULSD.**
- **No retailer-availability requirements (though there is an expectation of 15 ppm fuel being widely available).**
- **Beginning June 1, 2010, all diesel fuel used in highway heavy-duty diesel engines must meet a 15 ppm sulfur standard.**

Key Facts on the U.S. EPA Highway ULSD Sulfur Regulations



- The volume of 15 ppm highway diesel fuel that can be downgraded to 500 ppm highway diesel fuel at each point in the distribution system (downstream of refinery gate) is restricted to not more than 20% on an annual basis. This provision applies through 5/31/10.
- Each party in the distribution system is subject to this downgrade provision, and will be required to meet this requirement separately.
- There is no limit to the amount of highway fuel that may be downgraded to the off-road or heating oil pool.

Key Facts on the U.S. EPA Highway ULSD Sulfur Regulations



- During the transition phase downstream of the refinery, a downstream batch of ULSD having a test result of 24 ppm will be in compliance with the 15 ULSD standard.
- After the transition dates, a downstream batch of ULSD having a test result of 17 ppm will be in compliance with the 15 ppm ULSD standard.

Key Facts on the U.S. EPA ULSD Sulfur Regulations



- On-road and off-road 500 ppm diesel may be commingled, but accounted for separately in inventory. Off-road fuel will continue to be dyed at the rack.
- Further sulfur reductions in diesel fuel: NRLM at 500 ppm by 6/1/07 – and then to 15 ppm by 2010 (NR) and 2012 (LM).
- Note:
 - NR = agriculture, construction
 - LM = locomotive, marine

Key Facts on the U.S. EPA ULSD Sulfur Regulations



Ultra-Low Sulfur Diesel Standards

Fuel	2006	2007	2008	2009	2010	2011	2012	2013	2014
Highway 67%	80% 15 ppm / 20% 500 ppm				100% 15 ppm				
Nonroad (NR) 12%	HS	500	500	500	15	15	15	15	15
Locomotive and Marine (L&M) 6%	HS	500	500	500	500	500	15	15	15
Heating Oil 15%	HS	HS	HS	HS	HS	HS	HS	HS	HS
Jet Fuel	HS	HS	HS	HS	HS	HS	HS	HS	HS



Supply

- **The EPA has published survey reports indicating that U.S. refineries plan to produce 96% of their highway diesel as 15 ppm fuel.**
 - **However, a recently published Solomon Refinery Survey* has shown that**
 - **49 of 94 U.S. refineries have designed their system to a 10+ ppm manufacturing specification.**
 - **Pipeline industry appears to be heading to an origin specification of closer to 7 ppm. Only 25% of U.S. refineries are designed to deliver less or equal to 7ppm.**
 - **U.S. refiners may have to cut rates to meet the pipeline specification (7% reduction in highway diesel in 2006).**
 - **Implication**
 - **A 5 ppm refinery gate specification appears “unworkable” – would reduce highway diesel production by 22%.**

* 94 refineries with plans to produce ULSD responded to the survey

- **Diesel market has never undergone such a dramatic change. The specification is the strictest in the world, even beyond European experience.**
 - **Implication**
 - **Refiners will have greatly reduced options for dealing with off-spec product**
 - **Credit trading may provide some relief; BUT logistics may limit usefulness. The sulfur credits are PADD-specific.**



Diesel Dispenser Pump Labeling

- **For pumps dispensing 15 ppm highway diesel fuel:**
 - LOW-SULFUR DIESEL FUEL**
 - Recommended for use in all diesel highway vehicles
 - Required* for model year 2007 and later highway vehicles

- **For pumps dispensing 500 ppm highway diesel fuel:**
 - HIGH-SULFUR DIESEL FUEL – WARNING**
 - May damage model year 2007 and later highway vehicles
 - Federal Law *prohibits* use in these vehicles



Diesel Dispenser Pump Labeling

- For pumps dispensing non-road diesel fuel that are located at the same retail outlet as highway fuel pumps:

HIGH-SULFUR DIESEL FUEL – WARNING

May damage highway vehicles

Federal Law *prohibits* use in any highway vehicles

What About Lubricity?

- **Sulfur removal can reduce lubricity**
 - Fuel lubricity is the ability to lubricate fuel injectors and pumps.
 - Lubricity is especially important in new generation fuel injectors (fuel is used as a lubricant for moving parts).
 - Lubricity ensures your engine is protected.
 - Lubricity additive is injected at the terminal.

What Experience Does BP Have With ULSD



- **Will ULSD create operational problems or adversely impact MPG performance?**
 - No. Simply put – MPG performance is not related to the sulfur specification changes of this fuel. Customers should notice minimal (if any) difference
 - BP has been selling ULSD branded as “ECD” throughout California since 2002. More info at www.ecdiesel.com
 - BP also produces ECD in Midwest to supply the Chicago Transit Authority, Ann Arbor bus fleet, and others
 - BP has helped sponsor several fleet tests in transit and school buses, construction equipment, on-road trucks, and more with similar results.

Fleet Conversions

- **Plan conversion ahead of retrofitting vehicles**
- **It is not necessary to pump out existing diesel product. No special tank cleaning is required**
- **Plan three tank turns at the site to make the conversion to ultra low sulfur diesel**